FILE 'CAPLUS' ENTERED AT 18:01:22 ON 02 JUL 2004
L1 26514 (MEASUR? OR DEFIN? OR ESTIMAT? OR EVALUAT? OR DETERMIN? OR DETECT? OR MONITOR? OR CONTROL?) (3A) SULFATE?
L2 1034 L1 AND ("SULFUR DIOXIDE" OR SO2)
L3 148 L2 AND AMMON?
L4 223 ((MEASUR? OR DETERMIN? OR DETECT?) (3A) SULFATE?) (S) ("SULFUR DIOXIDE" OR SO2)
L5 0 SULFATE (S) "SULFUE DIOXIDE" (S) (CHROMIUM OR CR)
L6 0 (SULFATE (S) CHROMIUM) AND "SULFUE DIOXIDE"
L7 12 (PULSE? (2A) FLUOR?) (S) "SULFUR DIOXIDE"

L3 ANSWER 107 OF 148 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1991:565382 CAPLUS
DOCUMENT NUMBER: 115:165382
TITLE: Determination of sulfates in urban air by pyrolysis-gas chromatography with flame photometric detection
AUTHOR(S): Kim, Man Goo; Yagawa, Kazuo; Inoue, Hidenari; Shirai, Tsuneo
CORPORATE SOURCE: Dep. Appl. chem., Keio Univ., Yokohama, 223, Japan
SOURCE: Journal of Analytical and Applied Pyrolysis (1991), 20, 263-73
CODEN: JAAPDD; ISSN: 0165-2370
DOCUMENT TYPE: Journal
LANGUAGE: English
AB An anal. technique was developed for the determination of SO42- bound with NH4+ (volatile SO4) in suspended particulate matter (SPM) by pyrolysis-gas chromatog. with flame photometric detection (Py-GC/FPD). This method is based on the determination of SO2 generated by pyrolysis of SO42-, about 30% of which is converted to SO2 when pyrolysis is performed at 315°. This technique has several advantages such as small sample size, rapid anal., simplicity of sample handling, and low detection limit (30 ng as S). Atmospheric concns. of SO42- are measured by Py-GC/FPD and compared with results obtained by ion chromatog. (IC). The results show good correlation (r = 0.92). However, the average concns. of SO42- obtained by PY-GC/FPD are 18% higher than the results of water soluble SO42 (WSS) obtained for daytime samples (7:00-19:00) by IC. In contrast, the concns. of SO42- in night-time samples (19:00-7:00) obtained by Py-GC/FPD are 12% lower than those of WSS obtained by IC. These anal. results demonstrate that Py-GC/FPD is a useful technique for specific anal. of SO42- bound with NH4+. However, a contribution of SO42- containing components other than SO42- to SO2 cannot be neglected when Py-GC/FPD is used.

L3 ANSWER 117 OF 148 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1989:41441 CAPLUS
DOCUMENT NUMBER: 110:41441
TITLE: Production of sulfur dioxide gas from ammonium sulfate-containing solution
INVENTOR(S): Sekiguchi, Yoshitoshi; Sasaki, Kunio
PATENT ASSIGNEE(S): Hitachi Zosen Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent
LANGUAGE: Japanese
PATENT NO. KIND DATE APPLICATION NO. DATE
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JP 63201005 A2 19880819 JP 1987-32863 19870216
PRIORITY APPLN. INFO.: JP 1987-32863 19870216
AB SO2 gas is produced from (NH4)2SO4-containing solution by a two-stage combustion method. In the 1st stage, the (NH4)SO4-containing solution is combusted at 900-1350° under a stoichiometric air ratio 0.55-0.8:1. In the 2nd stage, the combustion zone is supplied with addnl. air to effectively inhibit the NOx formation. The method increases the yield of SO2 gas and prevents NOx emissions.

L3 ANSWER 124 OF 148 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1985:441704 CAPLUS
DOCUMENT NUMBER: 103:41704
TITLE: "Determination of sulfuric acid and ammonium sulfates by means of a computer-controlled thermo-denuder system"
AUTHOR(S): *Slanina, Jakob; Schoonebeek, Carlo A. M.; Klockow, Dieter; Niessner, Reinhardt*
CORPORATE SOURCE: Netherlands Energy Res. Found., Petten, 1755 ZG, Neth.
SOURCE: **Analytical Chemistry (1985), 57(9), 1955-60**
CODEN: ANCHAM; ISSN: 0003-2700
DOCUMENT TYPE: Journal
LANGUAGE: English
AB H2SO4 and (NH4)2SO4 in air are sampled by means of 2 Cu-CuO-coated denuders at temps. of 120 and 240°, resp. The tubes are heated to 800°, and the liberated SO2 is measured by means of a flame photometric detector. The interference of inorg. and organic S species can be avoided by passing the sample stream through PbO2 and an active C-coated denuder. The detection limit is 0.1 <SYM109>g H2SO4 or NH4 sulfate/m3 at a sampling time of 5 min and 0.02 <SYM109>g/m3 at a sampling time of 60 min. The system is completely automated and can function properly without any human assistance.

L3 ANSWER 125 OF 148 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1985:169117 CAPLUS
DOCUMENT NUMBER: 102:169117
TITLE: Calculation of the ammonium sulfate content in ammonium sulfite-bisulfite solutions
AUTHOR(S):Kuznetsov, A. G.; Kuznetsova, A. G.; Novozhilov, V.N.; Pankratova, V. N.; Dobromyslova, N. S.; Gradusova, L. I.; Artomasova, L. A.; Lavrent'eva, L. V.
CORPORATE SOURCE: Mosk. Khim.-Tekhnol. Inst., Moscow, USSR
SOURCE: Deposited Doc. (1984), VINITI 2039-84, 14 pp. Avail.: VINITI
DOCUMENT TYPE: Report
LANGUAGE: Russian
AB The oxidation degree, i.e. (NH4)2SO4 content of (NH4)2SO3-NH4HSO3 solns., obtained by SO2 sorption from H2SO4-production waste gases in NH4OH, was

calculated from the solution d. and contents of (NH4)2SO3 and NH4HSO3. The concentration ranges of the components are determined for the applicability of equations for the determination of (NH4)2SO4.

L3 ANSWER 129 OF 148 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1980:220033 CAPLUS
DOCUMENT NUMBER: 92:220033
TITLE: Measurements of atmospheric nitrate, sulfate, ammonium, and calcium using various filter setups
AUTHOR(S): Stensland, Gary J.; Bartlett, Janyce D.
CORPORATE SOURCE: Illinois State Water Surv., Urbana, IL, USA
SOURCE: Proceedings, Annual Meeting - Air Pollution Control Association (1979), 72nd.(3), 79-32.4, 16 pp.
CODEN: PRAPAP; ISSN: 0099-4081
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Four different Nuclepore filter samples collected different amts. of NO3- and of NH4+, but agreement was good for SO42- and for Ca. There was .apprx.18% more SO42- on Whatman 41 filters than on Nuclepore filters having 0.8 <SYM109> diameter pores, probably due to artifact SO42- formation on the Whatman filter by interaction of gaseous SOx with the filter media. NO3- and NH4+ concns. were also higher on Whatman filters, probably due to NOx interaction with the filter media.

L3 ANSWER 130 OF 148 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1980:218469 CAPLUS
DOCUMENT NUMBER: 92:218469
TITLE: Sulfuric acid aerosols and hydrogen chloride release in coastal atmospheres. Evidence of rapid formation of sulfuric acid particulates
AUTHOR(S): Hitchcock, Dian R.; Spiller, Lester L.; Wilson, Wiliam E.
CORPORATE SOURCE: Hitchcock Assoc., Farmington, CT, 06032, USA
SOURCE: Atmospheric Environment (1967-1989) (1980), 14(2),165-82
CODEN: ATENBP; ISSN: 0004-6981
DOCUMENT TYPE: Journal
LANGUAGE: English
AB High-volume particulate samples, obtained during 2 summertime expts. at coastal locations, were analyzed for SO42-, Cl-, NH4+, NO3-, Na+, and K+. The average stoichiometry of samples classified by backwards air-mass trajectories of sampled air were examined to determine the origin and chemical state of the nonseasalt sulfates. Excess SO42- was found in all samples and was associated with the loss of Cl- from seasalt particles. The excess SO42- (1-20 <SYM109>g/m3) was present as H2SO4 and was active in volatilizing Cl- from the samples. H2SO4 was produced by extremely rapid gas-particle reactions in the seasalt aerosols, reducing their pH to 1-3 and enabling Cl- volatilization. The amount of excess SO42- was controlled by the initial amount of seasalt present. The air-mass sources and absence of local SO2 implied a local biol. origin for <SYM163>20 <SYM109>g excess SO42-/m3.

L3 ANSWER 131 OF 148 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1979:598085 CAPLUS
DOCUMENT NUMBER: 91:198085
TITLE: "The continuous measurement of sulfur-containing aerosols by flame photometry: a laboratory study"
AUTHOR(S): *Huntzicker, James J.; Hoffman, Robert S.*
CORPORATE SOURCE: Oregon Grad. Cent., Beaverton, OR, 97005, USA
SOURCE: **Environmental Science Research (1978), 13(Environ. Pollut.), 191-209**
CODEN: EVSRBT; ISSN: 0090-0427
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Aerosols of H2SO4, (NH4)2SO4, and Na2SO4 were continuously measured in the laboratory with a sulfur-specific flame photometer. Separation of the aerosol S from gaseous S (SO2 and H2S) was achieved by a diffusion stripper upstream of the flame photometer.

L3 ANSWER 132 OF 148 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1977:194153 CAPLUS
DOCUMENT NUMBER: 86:194153
TITLE: Ammonium sulfate aerosols
AUTHOR(S): Brosset, Cyrill
CORPORATE SOURCE: Swed. Water Air Pollut. Res. Lab., Goteborg, Swed.
SOURCE: Inst. Vatten- Luftvardsforsk., [Publ.] B (1975), B 248, 14 pp.
CODEN: IVLBDQ
DOCUMENT TYPE: Report
LANGUAGE: English
AB Determination of concns. of black particulate matter, SO2, and sulfate in the air over Gothenburg, Sweden and at stations outside the city indicated that sulfate formation in Gothenburg increases when air masses move in from the European continent. The results were confirmed by determining sulfate, H+, and NH4+ in the H2O-soluble solid fraction of the particles.

L3 ANSWER 133 OF 148 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1977:194121 CAPLUS
DOCUMENT NUMBER: 86:194121
TITLE: Tentative method of analysis for sulfate aerosols pyrolyzable below 400 C by effluent gas analysis
AUTHOR(S): Adams, D. F.
CORPORATE SOURCE: USA
SOURCE: Health Laboratory Science (1975), 12(2), 150-7
CODEN: HLSCAE; ISSN: 0017-9035
DOCUMENT TYPE: Journal
LANGUAGE: English
AB H2SO4 and (NH4)2SO4 are separated from gaseous S compds. by collection of specially treated glass filters or impaction on Cu disks. The sample is heated to 400° under a stream of N, the liberated SO3 reduced to SO2 by hot Cu, and the SO2

determined by spectrophotometry, coulometry, or flame photometry. The range is 0.003-10 g/m3 as H2SO4. The volume of air sample should include 0.1-40 <SYM109>g sulfate.

L3 ANSWER 134 OF 148 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1973:409326 CAPLUS
DOCUMENT NUMBER: 79:9326
TITLE: Ammonia and related atmospheric pollutants at Harwell. I. Techniques for hourly sampling and analysis of pollutants
AUTHOR(S): Healy, T. V.; Pilbeam, A.
CORPORATE SOURCE: Appl. Chem. Div., At. Energy Res. Establ., Harwell, UK
SOURCE: U. K. At. Energy Res. Estab., Rep. (1972), AERE-R 6231, 1-9
CODEN: UKRGAL
DOCUMENT TYPE: Report
LANGUAGE: English
AB The equilibrium between SO2, NH3, and (NH4)2SO4 under atmospheric conditions was studied. Sampling and anal. procedures are described for these species and for smoke.

L3 ANSWER 135 OF 148 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1973:88260 CAPLUS
DOCUMENT NUMBER: 78:88260
TITLE: History of sulfur dioxide emission control at Cominco Ltd.
AUTHOR(S): Robinson, J. N.
CORPORATE SOURCE: Chem. Fert. Oper., Cominco, Ltd., Trail, BC, Can.
SOURCE: International Journal of Sulfur Chemistry, Part B: Quarterly Reports on Sulfur Chemistry (1972), 7(1), 51-6
CODEN: IQSCAQ; ISSN: 0094-9345
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB Several techniques to control SO2 emission from smelter operations are reviewed. Froth flotation procedures caused severe damage to vegetation. Conversion of SO2 to H2SO4 resulted in large quantities of then unusable H2SO4; but the manufacture of fertilizers (e.g. NH3, (NH4)2SO4, and NH4 phosphate) proved to be a feasible method of combating air pollution. SO2 was absorbed in aqueous NH4OH to produce a solution of NH4HSO4 which was reacted with H2SO4 yielding a solution of (NH4)2SO4 and liberating pure SO2 in gaseous form. The (NH4)2SO4 solution was evaporated yielding fertilizer grade (NH4)2SO4. SO2 was then reduced to S by passing over a hot bed of coke forming S and COS which was further converted to S over an alumina catalyst. O was also fed to the coke bed to maintain the temperature No refs.

L3 ANSWER 136 OF 148 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1972:517864 CAPLUS
DOCUMENT NUMBER: 77:117864
TITLE: Sulfate control in ammonia fuel gas desulfurization
INVENTOR(S): Welty, Albert B., Jr.

SOURCE: U.S., 6 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
PATENT NO. KIND DATE APPLICATION NO. DATE
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US 3676059 A 19720711 US 1970-41940 19700601
PRIORITY APPLN. INFO.: US 1970-41940 19700601
AB Buildup of SO42- in a flue gas desulfurization system employing an aqueous ammoniacal absorbent is prevented by reducing a portion of the SO42- to SO2. SO2 is removed by absorption in an aqueous solution of (NH4)2SO3 or NH3. At least a portion of the absorber effluent solution is regenerated by acidification with NH4HSO4 to liberate SO2 and to form an aqueous (NH4)2SO4-NH4HSO4 slurry. This slurry is decomposed into NH4HSO4 and NH3, and into a gas mixt.comprising NH3, N, SO2, and steam. The formed NH4HSO4 is used to liberate the SO2. The gas mixture is used to ammoniate a 2nd portion of the absorber effluent solution, and thereby create fresh absorbent solution

L3 ANSWER 137 OF 148 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1969:453263 CAPLUS
DOCUMENT NUMBER: 71:53263
TITLE: Automated laboratory procedures for the analysis of air pollutants
AUTHOR(S): Morgan, George B.; Tabor, E. C.; Golden, C.; Clements, H.
CORPORATE SOURCE: Public Health Serv., Cincinnati, OH, USA
SOURCE: Analysis Instrumentation (Research Triangle Park, North Carolina) (1967), Volume Date 1966, 4, 101-12
CODEN: AINSB8; ISSN: 0882-5785
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Automated methods are given for the anal. of various components present in collected particulates, impinged gases, and precipitation Among these components are sulfates, nitrates, nitrites, NH3, SO2, chlorides, and NO2. Adoption of automation has resulted in an increased precision for all of the aforementioned analyses. In addition, the productivity/man day is tripled to quadrupled over the corresponding manual procedures. Problems associated with the operation of the systems are discussed.

L3 ANSWER 138 OF 148 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1968:499146 CAPLUS
DOCUMENT NUMBER: 69:99146
TITLE: Determination of sulfur balance in free atmosphere on basis of sulfur dioxide and sulfate measurements
AUTHOR(S): Georgii, H. W.
CORPORATE SOURCE: Univ. Frankfurt/M., Frankfurt/M., Fed. Rep. Ger.
SOURCE: Umschau (1897) (1968), 68(18), 565-6
CODEN: UMSCAS; ISSN: 0372-4409
DOCUMENT TYPE: Journal

LANGUAGE: German
AB Measurements over Germany have shown that with increasing height the SO2 concentration decreases and the SO42- concentration increases. This could have taken place by reaction of SO2 with NH3 in the water drops of clouds. A considerable part of the atmospheric aerosols consists of (NH4)2SO4.

L4 ANSWER 26 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:10517 CAPLUS
DOCUMENT NUMBER: 132:54031
TITLE: Oxidation detection for sulfite/sulfate flue gas desulfurization systems
INVENTOR(S): Johnson, Dennis W.; Bhat, Pervaje A.
PATENT ASSIGNEE(S): The Babcock & Wilcox Company, USA
SOURCE: U.S., 7 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
PATENT NO. KIND DATE APPLICATION NO. DATE
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US 6010664 A 20000104 US 1993-89962 19930712
IN 181094 A 19980418 IN 1994-CA50 19940127
PRIORITY APPLN. INFO.: US 1993-89962 A 19930712
AB A method for monitoring the oxidation rate in a flue gas desulfurization system having a slurry comprises locating a monitor in the system for accessing the slurry. A sample is periodically drawn from the slurry by the monitor wherein a titration is performed on each sample. The titration performed on each sample comprises adding a potassium iodate KIO3 solution, a potassium iodide KI starch solution and an acid solution to the sample in the monitor for causing the sample to exhibit a color corresponding to the oxidation rate. REFERENCE COUNT: 7

L4 ANSWER 65 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1994:199034 CAPLUS
DOCUMENT NUMBER: 120:199034
TITLE: Sampling and analysis of atmospheric sulfates
AUTHOR(S): Zwozdziak, Anna B.; Matyniak, Zdzislaw; Kmiec, Grazyna
CORPORATE SOURCE: Inst. Environ. Prot. Eng., Tech. Univ. Wroclaw, Wroclaw, 50-370, Pol.
SOURCE: Environment Protection Engineering (1991), 17(1-2), 77-83
CODEN: EPEND9; ISSN: 0324-8828
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A study was made to determine whether fine sulfate aerosol penetrates the filter and how their concns. measured on the filters correspond to atmospheric concns. The data represent the sampling point at the summit of Szrenica, 1362 m above sea level (Sudeten Mountains, southwestern Poland) and laboratory tests. The use of cellulose filters for low-volume sampling of airborne sulfates is questionable. To obtain more reliable values

for the products of SO2 conversion in a clear atmospheric, it is recommended to measure the sulfate concns. after their passage through the filter media.

L4 ANSWER 68 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1993:478993 CAPLUS
DOCUMENT NUMBER: 119:78993
TITLE: Apparatus for continuous IR analysis of a medium containing particles, e.g., diesel exhaust gases and flue gases
INVENTOR(S): Asano, Ichiro; Kojima, Kennosuke; Tsukamoto, Tokihiro; Kohsaka, Hiroji
PATENT ASSIGNEE(S): Horiba, Ltd., Japan
SOURCE: Ger. Offen., 6 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
PATENT NO. KIND DATE APPLICATION NO. DATE
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DE 4220997 A1 19930218 DE 1992-4220997 19920626
DE 4220997 C2 19940728
JP 05045284 A2 19930223 JP 1991-231194 19910817
US 5279146 A 19940118 US 1992-926593 19920805
PRIORITY APPLN. INFO.: JP 1991-231194 19910817
AB Soluble organic fractions, soot, and sulfates are determined quant. and sep. based on the H/C ratio in the hydrocarbons measured, based on the H2O, CO2, and SO2 released from the particulate matter collected by a sampling tube. For comparison, gas from a branch of the sampling tube is filtered to remove the particulates and analyzed to provide a reference sample.

=> d l4 ibib abs 82, 84, 71, 76, 81

L4 ANSWER 84 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1989:427903 CAPLUS
DOCUMENT NUMBER: 111:27903
TITLE: Determination of sulfur air pollution from long-range transport by x-ray fluorescence spectrometry
AUTHOR(S): Spitzer, Zdenek; Vymola, Radomir; Kobr, Miroslav
CORPORATE SOURCE: Czech.
SOURCE: Sbornik Praci UVP (1988), 51, 128-62
CODEN: SPUVBR; ISSN: 0551-8334
DOCUMENT TYPE: Journal
LANGUAGE: Czech
AB SO2 and SO42- are determined in air by x-ray fluorescence spectrometry after sampling on Whatman paper filters. Calibration of the instrument is described, and the results of anal. of real samples using the x-ray fluorescence are compared with those from a colorimetric method. The precision and reproducibility of the new method are discussed, and the meteorol. conditions limiting its application are described.

L4 ANSWER 81 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1989:559370 CAPLUS
DOCUMENT NUMBER: 111:159370
TITLE: Determination of sulfur in air by x-ray fluorescence spectrometry
AUTHOR(S): Spitzer, Zdenek; Lisy, Jaromir; Kobr, Miroslav; Santroch, Jaroslav
CORPORATE SOURCE: Ustav Vyzkum Vyuziti Paliv, Prague, Czech.
SOURCE: Ochrana Ovzdusi (1989), 3(1), 17-20
CODEN: OCOVAV; ISSN: 0322-8185
DOCUMENT TYPE: Journal
LANGUAGE: Czech
AB X-ray fluorescence spectrometry was used to analyze aerosol and KOH-impregnated filters for determination of S (sulfates and SO2) in air. The spectrometer used was the Siemens SRS-1. The method is nondestructive; the S is determined from the fluorescence K<SYM97> line of S at 0.5373 nm using an x-ray tube with a Cr anode. The calibration procedure and evaluation of the measurements are discussed. The detection limit was 0.24 <SYM109>g S per filter or 0.3 <SYM109>g S/m3 of air and the precision was better than 1.5% relative standard deviation.

L4 ANSWER 98 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1987:130822 CAPLUS
DOCUMENT NUMBER: 106:130822
TITLE: Direct conversion of sulfide and sulfate minerals to sulfur dioxide for isotope analyses
AUTHOR(S): Ueda, Akira; Krouse, H. Roy
CORPORATE SOURCE: Dep. Phys., Univ. Calgary, Calgary, AB, T2N 1N4, Can.
SOURCE: Geochemical Journal (1986), 20(4), 209-12
CODEN: GEJOBE; ISSN: 0016-7002
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Sulfide and sulfate minerals mixed with V2O5 and SiO2, were heated in a vacuum at 950° for 15 min. The evolved SO3 was converted to SO2 by reaction with metallic Cu for S isotope detns. by mass spectrometry. This technique yields SO2 of consistent O isotope composition regardless of whether sulfide or sulfate is converted. The reproducibilities of S conversion and <SYM100>34S values were 98 ± 5% and ±0.2%, resp. The technique is particularly suitable for small samples. Successful isotope detns. were obtained with natural samples containing <1 mg S. In some cases, variations in <SYM100>34S of 2% were found for single grains analyzed from a small specimen.

L4 ANSWER 100 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1986:596400 CAPLUS
DOCUMENT NUMBER: 105:196400
TITLE: Comparability of results in determining background concentrations of sulfur dioxide and sulfates in air
AUTHOR(S): Pastukhov, B.
CORPORATE SOURCE: USSR

SOURCE: Probl. Fon. Monitoringa Sostoyaniya Prirod. Sredy, Leningrad (1986), (4), 246-56 From: Ref. Zh., Khim. Abstr. No. 16I558
DOCUMENT TYPE: Journal
LANGUAGE: Russian
AB Title only translated.

L4 ANSWER 102 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1986:577610 CAPLUS
DOCUMENT NUMBER: 105:177610
TITLE: Method for measurement of atmospheric pollution using aircraft
AUTHOR(S): Koldovsky, M.; Prokop, M.; Bednar, Ya.
CORPORATE SOURCE: USSR
SOURCE: Probl. Fon. Monitoringa Sostoyaniya Prirod. Sredy, Leningrad (1986), (4), 234-6 From: Ref. Zh., Khim. 1986, Abstr. No. 14I575
DOCUMENT TYPE: Journal
LANGUAGE: Russian
AB Title only translated.

L4 ANSWER 104 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1986:484348 CAPLUS
DOCUMENT NUMBER: 105:84348
TITLE: Simultaneous collection of sulfur dioxide and sulfate by a selective sampler and their analysis at background levels
AUTHOR(S): Argese, Emanuele; Scalet, Biancamaria; Lavagnini, Irma; Rigo, Adelio
CORPORATE SOURCE: Dep. Environ. Sci., Venice, Italy
SOURCE: Analyst (Cambridge, United Kingdom) (1986), 111(5), 543-5
CODEN: ANALAO; ISSN: 0003-2654
DOCUMENT TYPE: Journal
LANGUAGE: English
AB SO42- and SO2 were collected sep. from the atmospheric, with high efficiency and selectivity, in a dual filter apparatus The 1st filter, impregnated with HClO4, was used to collect the aerosol SO42- and the 2nd filter, impregnated with NaOH solution, collected the gaseous SO2. The determination of these species was done by ion chromatog. (SO42-) and voltammetry (SO2) in the filter washings. Operating with sampling times of 30 min, at a filter face velocity of .apprx.18 cm/s, the detection limits were estimated to be 0.8 <SYM109>g/m3 for SO42- and 0.3 <SYM109>g/m3 for SO2. The possible oxidation of SO2 by NOx is discussed, and the operating conditions required to make this reaction negligible are given.

L4 ANSWER 115 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1983:415681 CAPLUS
DOCUMENT NUMBER: 99:15681
TITLE: Direct potentiometric determination of sulfate by means of a lead-sensitive ion-selective electrode
AUTHOR(S): Valentova, Milada; Sucha, Ladislav; Fischerova, Hana

CORPORATE SOURCE: Dep. Anal. Chem., Prague Inst. Chem. Technol., Prague, 166 28, Czech.
SOURCE: Sbornik Vysoke Skoly Chemicko-Technologicke v Praze, H: Analyticka Chemie (1982), H17, 43-55
CODEN: SVSABU; ISSN: 0556-5294
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Sulfates were determined by using 2 approaches: (1) the calibration curve method and (2) the analyte subtraction method (ASM) with Pb(ClO4)2 solns. in 50 volume % MeOH. Sulfates >1 mmol/L can be determined by both methods with errors <10% for Pb2+/SO42- ratios from 10:3 to 10:9. The simpler ASM method was used for determining sulfates in sandstone and arenaceous marl historical building stone samples from areas with ambient air polluted by SO2.

L4 ANSWER 116 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1983:203578 CAPLUS
DOCUMENT NUMBER: 98:203578
TITLE: Comparison of monitoring methods for heavy metals, sulfur dioxide, and sulfates
AUTHOR(S): Burtseva, L. V.; Volosneva, G. A.; Lapenko, L. A.; Pastukhov, B. V.
CORPORATE SOURCE: USSR
SOURCE: Monitoring Fonov. Zagryazneniya Prirod. Sred., L. (1982), (1), 212-34
From: Ref. Zh., Khim. 1983, Abstr. No. 6I655
DOCUMENT TYPE: Journal
LANGUAGE: Russian
AB Title only translated.

L4 ANSWER 120 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1983:59602 CAPLUS
DOCUMENT NUMBER: 98:59602
TITLE: Determination of sulfate in water by thermal decomposition and microcoulometric sulfur dioxide analysis with a chlorate-silver-titration cell
AUTHOR(S): Schnitzler, Martin; Sander, Richard; Sontheimer, Heinrich
CORPORATE SOURCE: Engler-Bunte-Inst., Univ. Karlsruhe, Karlsruhe, D-7500, Fed. Rep. Ger.
SOURCE: Vom Wasser (1982), 58, 59-67
CODEN: VJWWAU; ISSN: 0083-6915
DOCUMENT TYPE: Journal
LANGUAGE: German
AB In the SO42- determination in waters, SO42- is decomposed at 1000° on WO3 in an Ar atmospheric The SO2 formed reduces ClO3- to Cl- which is analyzed microcoulometrically. For determination of SO42- <500 mg/L in various water samples the method gives a relative standard deviation of 1.5%.

L4 ANSWER 125 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1981:624654 CAPLUS

DOCUMENT NUMBER: 95:224654
TITLE: Results of comparisons of methods for the determination of background concentrations of sulfur dioxide and sulfates
AUTHOR(S): Vol'berg, N. Sh.; Kuz'mina, T. A.; Hryniewicz, Regina; Cerovski, M.
CORPORATE SOURCE: USSR
SOURCE: Meteorol. Aspekty Zagryaz. Atmos. (1981), 96-101. Editor(s): Berlyand, M. E. Gidrometeoizdat: Leningrad, USSR.
CODEN: 46AHAF
DOCUMENT TYPE: Conference
LANGUAGE: Russian
AB SO2 and sulfate aerosols in the atmospheric of Terskol (USSR) were determined by anal. chemical groups of the USSR, Czechoslovakia, and Poland. The average SO2 content in the atmospheric from Sept. 9, 1978, to Sept. 18, 1978, varied from 0.7 to 3.4 <SYM109>g/m3. Recommendations are given to decrease the discrepancies between data of different labs.

L4 ANSWER 126 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1981:507776 CAPLUS
DOCUMENT NUMBER: 95:107776
TITLE: Preparation of sulfur dioxide from sulfates for isotopic analysis of sulfur
AUTHOR(S): Halas, Stanislaw; Wolacewicz, Wojciech
CORPORATE SOURCE: Inst. Phys., Maria Curie-Sklodowska Univ., Lublin, Pol.
SOURCE: Annales Universitatis Mariae Curie-Sklodowska, Sectio AAA: Physica (1979), 33, 101-13
CODEN: AUMADZ; ISSN: 0137-6861
DOCUMENT TYPE: Journal
LANGUAGE: Polish
AB SO2 is extracted from naturally occurring sulfates of Ba, Sr, or Ca for S isotopic anal. by reaction with NaPO3 in vacuum at 800°. The SO3 obtained is reduced to SO2 by Cu at 750°. The gaseous product contains only small amts. of CO2 and H2O as impurities. The contents of 18O in SO2 thus obtained reflects the O isotopic composition of the given sulfate.

L4 ANSWER 131 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1981:179809 CAPLUS
DOCUMENT NUMBER: 94:179809
TITLE: Significance and measurement of sulfates in suspended particulates
AUTHOR(S): Satish, J.
CORPORATE SOURCE: Inst. Hyg. Arbeitsphysiol., ETH, Zurich, 8092, Switz.
SOURCE: Sozial- und Praeventivmedizin (1980), 25(4), 201-2
CODEN: SZPMAA; ISSN: 0303-8408
DOCUMENT TYPE: Journal
LANGUAGE: German
AB Since atmospheric sulfate aerosols, as well as SO2 itself, seem to present a major public health problem, sulfates were determined in the ambient air of Zurich, Switzerland. Random samples taken at 3 stations during 2 sampling periods (summer

1978, winter 1978-9) showed atmospheric sulfate concns. of 5-23 <SYM109>g/m3, the overall average being 16.

L4 ANSWER 132 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1981:179730 CAPLUS
DOCUMENT NUMBER: 94:179730
TITLE: Sampling and analysis of sulfur dioxide and particulate sulfate in air using impregnated filters
AUTHOR(S): Klockow, D.; Teckentrup, A.
CORPORATE SOURCE: Abt. Chem., Univ. Dortmund, Dortmund, D-4600/50, Fed. Rep. Ger.
SOURCE: International Journal of Environmental Analytical Chemistry (1980), 8(2), 137-48
CODEN: IJEAA3; ISSN: 0306-7319
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A simple procedure for simultaneous sampling, but sep. anal. of SO2 and SO42- is described. Both species are collected on the same impregnated filter. By using HgCl4 solution for impregnation, SO2 is effectively absorbed and stabilized as SO32-, but can easily be separated from the co-collected SO42- by a microdiffusion step. By this means both species can be determined in 1 sample by isotope dilution anal. Because the humidity of the impregnated filter has a distinct influence on the collection efficiency for SO2, this technique is recommended for short-term sampling.

L4 ANSWER 133 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1981:161850 CAPLUS
DOCUMENT NUMBER: 94:161850
TITLE: Sulfur in the atmosphere
AUTHOR(S): Van Dop, H.
CORPORATE SOURCE: Koninklijk Nederlands Meteorol. Inst., Amsterdam, Neth.
SOURCE: Nederlands Tijdschrift voor Natuurkunde, A (1980), A46(2), 88-91
CODEN: NTNAD6; ISSN: 0378-6374
DOCUMENT TYPE: Journal
LANGUAGE: Dutch
AB The measurement of SO2 and sulfate aerosol in the atmospheric over Holland at various locations and its effect on the ecol. is discussed. The emitted SO2 appears to travel long distances.

L4 ANSWER 134 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1981:113813 CAPLUS
DOCUMENT NUMBER: 94:113813
TITLE: Direct extraction of sulfur dioxide from sulfates for isotopic analysis
AUTHOR(S): Halas, Stanislaw; Wolacewicz, Wojeiech P.
CORPORATE Inst. Phys., Marie Curie-Sklodowska Univ., Lublin, 20-031, Pol.
SOURCE: Analytical Chemistry (1981), 53(4), 689-9
CODEN: ANCHAM; ISSN: 0003-2700

DOCUMENT TYPE: Journal
LANGUAGE: English
AB A convenient method of extraction of SO2 from natural sulfates (BaSO4, SrSO4, and CaSO4) for S isotopic anal. is described. A sulfate is reacted with NaPO3 under vacuum at 850°; SO3 thus obtained is then reduced to SO2 on Cu heated to 750°. The reaction takes place with complete yield and provides very good reproducibility of measurements despite a remarkable variation in <SYM100>(18O) content of analyzed sulfates. The long-term reproducibility of 34S/32S ratios is .apprx.0.05.permill..

L4 ANSWER 137 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1980:478710 CAPLUS
DOCUMENT NUMBER: 93:78710
TITLE: Spectrophotometric determination of sulfate for measuring sulfur dioxide in air
AUTHOR(S): Fernandez, T.; Garcia Luis, A.; Garcia Montelongo, F.
CORPORATE SOURCE: Res. Lab., Cia. Esp. Pet. S. A., Santa Cruz, Spain
SOURCE: Analyst (Cambridge, United Kingdom) (1980), 105(1249), 317-27
CODEN: ANALAO; ISSN: 0003-2654
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Low concns. of SO42- were determined using Sulfonazo III as complexing agent with the unreacted Ba after precipitation of BaSO4. The absorbance of the blue complex thus formed was proportional to the SO42- concentration and the working range was 3-30 <SYM109>g SO42-/5 mL of sample. For 0.6-6 <SYM109>g SO42-/mL, the standard deviation was <0.1 <SYM109>g/mL. The method was used to determine SO2 in ambient air. For example, the mean SO2 concns. determined for a lab sampling station with levels of 60 and 170 <SYM109>g/m3 were 58 and 173 <SYM109>g/m3, using 5-mL samples taken from 100 mL of absorbing solution after 2 m3 of air had been drawn through it.

L4 ANSWER 145 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1978:539796 CAPLUS
DOCUMENT NUMBER: 89:139796
TITLE: Direct reduction of sulfates to sulfate dioxide for isotopic analysis
AUTHOR(S): Coleman, Max L.; Moore, Michael P.
CORPORATE SOURCE: Geochem. Div., Inst. Geol. Sci., London, UK
SOURCE: Analytical Chemistry (1978), 50(11), 1594-5
CODEN: ANCHAM; ISSN: 0003-2700
DOCUMENT TYPE: Journal
LANGUAGE: English
AB BaSO4 mixed with silica and Cu2O is quant. reduced to SO2, for isotopic anal., at 1120°. This offers an advantage over previous methods which used thermal decomposition at 1400°. The method can be used for extraction of total S from whole rock samples.

L4 ANSWER 159 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1977:21159 CAPLUS

DOCUMENT NUMBER: 86:21159
TITLE: Sulfur dioxide interferences in the measurement of ambient particulate sulfates
AUTHOR(S): Meserole, F. B.; Schwitzgebel, K.; Jones, B. F.; Thompson, C. M.; Mesich, F. G.
CORPORATE SOURCE: Radian Corp., Austin, TX, USA
SOURCE: U. S. NTIS, PB Rep. (1976), PB-249620, 60 pp. Avail.: NTIS From: Gov. Rep. Announce. Index (U. S.) 1976, 76(10), 186
CODEN: XPBRCA
DOCUMENT TYPE: Report
LANGUAGE: English
AB The laboratory expts. were designed to scope potential errors involved in the ambient sulfate determination utilizing high-volume (Hi-Vol) sampling procedures. Factors contributing to positive errors include filter type and residual sulfate in the filters. The greatest influence was high ambient SO2 concns. at low temps. SO2 is sorbed on the filters and rapidly oxidized to sulfate. This mechanism, under certain conditions leads to sulfate artifact formation comparable to values reported from ambient measurements.

L4 ANSWER 180 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1970:533794 CAPLUS
DOCUMENT NUMBER: 73:133794
TITLE: Infrared method for rapid analysis of the sulfate content of reacted lime and limestone materials
AUTHOR(S): Rissmann, Edwin F.; Larkin, Robert L.
CORPORATE SOURCE: Gen. Technol. Corp., Reston, VA, USA
SOURCE: Analytical Chemistry (1970), 42(13), 1628-32
CODEN: ANCHAM; ISSN: 0003-2700
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A thin film ir cell technique has been developed employing an aqueous system for the rapid anal. of the sulfate content of calcined limestones which have been reacted with SO2 in a flue gas. Accurate analyses can be reproducibly conducted by dissolving the reacted limestone material in EDTA tetra-Na salt saturated aqueous solns. and obtaining spectra of those in a 0.003 mm ir liquid cell. For the ir detns., an identical cell, containing a saturated EDTA aqueous solution is placed in the reference beam of the spectrometer. Results obtained agree well with detns. made independently by different techniques. Similar anal. can also be conducted for the carbonate and hydroxide contents of limestone with the use of EDTA saturated D2O as the solvent. The general approach should be useful for many solids analyses.

=> d l4 ibib abs 194

L4 ANSWER 194 OF 223 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1966:79684 CAPLUS
DOCUMENT NUMBER: 64:79684
ORIGINAL REFERENCE NO.: 64:14962b

TITLE: "Determination of sulfate by reduction to sulfur dioxide"
AUTHOR(S): *Cubero, S. Nuerez; Abellan, J. Ortega*
Anales Real Soc. Espan. Fiz. Quim (Madrid), Ser. B (1965), 61(11), 1097-100
DOCUMENT TYPE: Journal
LANGUAGE: Spanish
AB In a medium of polyphosphoric acids, SO42- is reduced by powdered Cu to SO2, which is removed by distillation in a N stream. For >1 mg. SO42-, SO2 is absorbed in standard I3- solution and excess I3- is back-titrated with Na2S2O3. For <1 mg. SO42-, SO2 is absorbed in a solution of Na chloromercurate and determined colorimetrically by the p-rosainriline method (West and Gaeke, CA 51, 11930h).

L3 ANSWER 1 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:796461 CAPLUS
DOCUMENT NUMBER: 138:27407
TITLE: Effect of Cr3+ and SO42- on the structure of rust layer formed on steels by atmospheric corrosion
AUTHOR(S): Yamashita, Masato; Uchida, Hitoshi; Cook, Desmond C.
CORPORATE SOURCE: Faculty of Engineering, Himeji Institute of Technology, Himeji, Hyogo, 671-2201, Japan
SOURCE: ASTM Special Technical Publication (2002), STP 1421(Outdoor Atmospheric Corrosion), 149-156
CODEN: ASTTA8; ISSN: 0066-0558
PUBLISHER: American Society for Testing and Materials
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The effect of chromium ion (Cr3+) and sulfate ion (SO2-4) on the structure of the rust layer formed by thin electrolyte-film corrosion of low-alloy steels was examined By using x-ray diffraction spectroscopy, coexistence of Cr3+ and SO2-4 in the electrolyte film covering the steel surface quickly forms the Cr-goethite (<SYM97>-(Fe 1-x, Cr x) OOH) layer which was known as the final protective rust layer. Scanning, vibrating electrode measurements showed that the rust layer formed under the electrolyte film containing Cr3+ and SO 2-4 possesses higher protective ability against the aggressive chloride environment. Mossbauer spectroscopy revealed that most of the Cr-goethite formed by corrosion of the Fe-5at%Cr alloy under thin electrolyte-film containing SO24 was the superparamagnetic ultra-fine Cr-goethite. It can be said that the Cr-goethites possess the high protective ability against aggressive corrosives.
REFERENCE COUNT: 9

L3 ANSWER 2 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1998:2947 CAPLUS
DOCUMENT NUMBER: 128:51209
TITLE: Corrosion of several steels after their exposure at high temperature to oxygen and sulfur mixtures
AUTHOR(S): Otero, E.; Pardo, A.; Perez, F. J.; Perosanz, F. J.; Parra, A.; Levi, T.
CORPORATE SOURCE: Departamento Ciencia Materiales, Facultad Ciencias Quimicas, Universidad Complutense Madrid, Madrid, E-28040, Spain

SOURCE: Materials Science Forum (1997), 251-254(Pt. 2, High Temperature Corrosion and Protection of Materials 4, Pt. 2), 615-623
CODEN: MSFOEP; ISSN: 0255-5476
PUBLISHER: Transtec
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Exposure to SO2/O2 mixts. between 300 and 700° are used to study the corrosion behavior of P-5 and P-22 steels, used in boiling water pipelines in industrial burners. Emphasis was placed on thermal stability of the corrosion products formed, analyzing the cases in which the corrosion coating is preventive. ESCA, SEM, and x-ray diffraction were used to characterize the surface microstructure. A mechanism for the formation of oxidized layers as a product of the degradation processes is suggested.

L3 ANSWER 3 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1994:585861 CAPLUS
DOCUMENT NUMBER: 121:185861
TITLE: Monitoring SO2 with passive samplers: a laboratory evaluation of Na2CO3 and triethanolamine as absorbing media
AUTHOR(S): Scheeren, B. A.; De Santis, F.; Allegrini, I.; Heeres, P.
CORPORATE SOURCE: Dep. Air Pollution, Agricultural Univ. Wageningen, Wageningen, Neth.
International Journal of Environmental Analytical Chemistry (1994), 56(1), 73-85
CODEN: IJEAA3; ISSN: 0306-7319
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Two different types of passive samplers (a badge and a tube-type) for the determination of SO2 have been developed. Both samplers make use of a Na2CO3 coated quartz fiber filter as sampling layer. SO2 is collected as sulfite which, after extraction and oxidation, is determined as sulfate using ion-chromatog. In laboratory calibration tests good linearity of the average uptake has been found over a SO2 concentration range from 20 to 400 ppb. The sensitivity and capacity of the method is sufficient to cover a wide range of ambient concns., while the badge and the tube have detection limits for a one week exposure of about 4 and 34 <SYM109>g/m3, resp. Precision, calculated on replicates, for both samplers was between 5 and 10%. The influence of humidity was studied in comparison to triethanolamine (TEA) coated substrates. It was seen that for the collection efficiency TEA coated fibers show a 2 to 3 times stronger dependency on relative humidity in comparison to Na2CO3. It was also found that the badge type sampler showed good performance with an average windspeed higher than 1 m/s. The tube sampler was found to give reliable and accurate results at windspeeds lower than 1 m/s. Accuracy was investigated in the field in comparison with a diffusion denuder technique. Regression anal. of the data indicated good agreement between the two methods.

L3 ANSWER 5 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1992:242549 CAPLUS
DOCUMENT NUMBER: 116:242549

TITLE: Effect of heat treatment conditions on the surface properties and kinetic characteristics of a modified sulfate catalyst
AUTHOR(S): Markov, V. A.; Dobkina, E. I.; Kuznetsova, S. M.; Larionov, A. M.; Petrov, S. N.
CORPORATE SOURCE: Russia
SOURCE: Zhurnal Prikladnoi Khimii (Sankt-Peterburg, Russian Federation) (1991), 64(10), 2044-8
CODEN: ZPKHAB; ISSN: 0044-4618
DOCUMENT TYPE: Journal
LANGUAGE: Russian
AB A study of the effects of thermal treatment medium (Ar, O2, air) on H2SO4 catalysts prepared by impregnating supports with aqueous solns. of K2SO4, Cs2SO4, Cr2(SO4)3, and VOSO4 at 90° showed that the kinetic properties of the catalysts varied. A 10-15 Å thick Cr sulfate film formed on the catalyst surface in an oxidizing amount covering the active component with an equilibrium melt layer. This decreases catalyst activity for SO2 oxidation The layer is destroyed by heating at 700°, so catalysts prepared by heating in different media differ in activity.

L3 ANSWER 6 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1989:236445 CAPLUS
DOCUMENT NUMBER: 110:236445
TITLE: Performance of sulfation and nitration plates used to monitor atmospheric pollutant deposition in a real environment
AUTHOR(S): Noel, Denis; Hechler, Jean Jacques; Roberge, Helene
CORPORATE SOURCE: Ind. Mater. Res. Inst., Natl. Res. Counc. Canada, Boucherville, QC, J4B 6Y4, Can.
SOURCE: Atmospheric Environment (1967-1989) (1989), 23(3), 603-9
CODEN: ATENBP; ISSN: 0004-6981
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Sulfation and nitration plates were exposed outdoors for various periods of time to evaluate their performance in a real environment. These passive monitors were used to estimate the deposition of pollutants on metallic surfaces, and thus to evaluate the influence of the atmospheric on the corrosion. Single-column ion chromatog. was used to determine the quantity of anions absorbed on the plates. This technique was better than other anal. procedures such as turbidimetry or colorimetry because passive monitors exposed in an atmospheric with a low degree of pollution can be analyzed without preconcn. However, the pH of the sample to be injected on the chromatog. column must be adjusted to 6.0-12.0 in order to obtain reproducible sulfate values. For sulfation plates, the additivity of the deposition process was excellent for a period of exposure <SYM163>3 mo, with a reproducibility of .apprx.2%. For nitration plates, the deposition was not cumulative due to a phys. change of the monitor during exposure. The correlation between the amts. of sulfate found on sulfation and nitration plates was also examined

L3 ANSWER 8 OF 8 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1974:440727 CAPLUS

DOCUMENT NUMBER: 81:40727
TITLE: Effect of methane on sulfur dioxide and sodium sulfate-induced corrosion of nickel-base alloys
AUTHOR(S): McKee, D. W.; Romeo, G.
CORPORATE SOURCE: Gen. Electr. Res. Dev. Cent., Schenectady, NY, USA
SOURCE: Metallurgical Transactions (1974), 5(5), 1127-39
CODEN: MTGTBF; ISSN: 0026-086X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The corrosion of Ni-base binary alloys, containing <SYM163>20 weight% Cr or Al, by SO2 contained in a N gas stream was considerably enhanced at 800-1000° in the presence of low concns. of gaseous CH4. The magnitude of the effect, which is related to the ability of the alloy surface to catalyze the decomposition of the hydrocarbon to solid C, decreases with increasing Cr and Al. Ni containing <10 weight% Al is more readily attacked by SO2 alone than are the corresponding Ni-Cr alloys, although the deleterious effects of added CH4 are more marked in the Ni-Cr series. The extent of high-temperature corrosion by deposited Na2SO4 at 900-1000° is also generally increased when small amts. of CH4 are introduced, although in this case the addition of Cr confers greater corrosion resistance than does the addition of an equivalent Al concentration In the presence of either Na2SO4 or SO2, the addition of CH4 to the ambient N atmospheric results in localized reducing conditions and increased S potentials near the alloy surface.

=> d l2 ibib abs 31, 32

L2 ANSWER 31 OF 89 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1992:242549 CAPLUS
DOCUMENT NUMBER: 116:242549
TITLE: Effect of heat treatment conditions on the surface properties and kinetic characteristics of a modified sulfate catalyst
AUTHOR(S): Markov, V. A.; Dobkina, E. I.; Kuznetsova, S. M.; Larionov, A. M.; Petrov, S. N.
CORPORATE SOURCE: Russia
SOURCE: Zhurnal Prikladnoi Khimii (Sankt-Peterburg, Russian Federation) (1991), 64(10), 2044-8
CODEN: ZPKHAB; ISSN: 0044-4618
DOCUMENT TYPE: Journal
LANGUAGE: Russian
AB A study of the effects of thermal treatment medium (Ar, O2, air) on H2SO4 catalysts prepared by impregnating supports with aqueous solns. of K2SO4, Cs2SO4, Cr2(SO4)3, and VOSO4 at 90° showed that the kinetic properties of the catalysts varied. A 10-15 Å thick Cr sulfate film formed on the catalyst surface in an oxidizing amount covering the active component with an equilibrium melt layer. This decreases catalyst activity for SO2 oxidation The layer is destroyed by heating at 700°, so catalysts prepared by heating in different media differ in activity.

L6 ANSWER 40 OF 160 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1997:289214 CAPLUS
DOCUMENT NUMBER: 126:279880
TITLE: Reduction of SO42- Ions in Sulfated Zirconia Catalysts
AUTHOR(S): Xu, Bo-Qing; Sachtler, Wolfgang M. H.
CORPORATE SOURCE: V. N. Ipatieff Laboratory, Center for Catalysis and Surface Science, Department of Chemistry, Northwestern University, Evanston, IL, 60208, USA
SOURCE: Journal of Catalysis (1997), 167(1), 224-233
CODEN: JCTLA5; ISSN: 0021-9517
PUBLISHER: Academic
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Upon reduction of sulfated zirconia (SZ) catalysts with H2, roughly 50% of the sulfate groups are reduced to SO2 which is detected mass spectrometrically; the other 50% are reduced to S2- ions that are retained at the surface. The measured ratio H/S (consumed H atoms to S atoms) originally present as SO42- ions was 5. In the presence of Pt, either deposited on the SZ, or as Pt/NaY in a phys. mixture with SZ, or downstream of SZ in a layered bed arrangement, SO2 was reduced further to H2S, which is detected chemical and by MS. In this case H/S = 8. The TPR peak position is shifted to lower temperature in PtSZ and in phys. mixts. of SZ and Pt/NaY. Reduction of sulfate groups lowered the Bronsted acidity of the catalysts, as indicated by the intensity of the IR bands of adsorbed ammonia. Bronsted acidity was almost totally eliminated by H2 reduction at 400°. The position of the band of ammonia on Lewis sites was not significantly affected by sulfate reduction, but the temperature at which ammonia is desorbed from these sites was lowered. The H2S that is formed in the presence of Pt partially poisons the Pt particles; their catalytic signature in the isotope exchange of cyclopentane with D2 indicated that large Pt ensembles are blocked by adsorbed S atoms even after reduction up to 350°, but that isolated Pt atoms are still acting as active sites. After complete reduction of the SO42- groups, Pt in PtSZ loses its catalytic activity for the isotope exchange reaction. REFERENCE COUNT: 40

L6 ANSWER 42 OF 160 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1996:506371 CAPLUS
DOCUMENT NUMBER: 125:149840
TITLE: Catalyst for purification of exhaust gases
INVENTOR(S): Banno, Kouji; Sugiura, Masahiro; Kumai, Yoko; Doi, Haruo; Nagami, Tetsuo; Aono, Norihiko; Kasahara, Koichi; Matsumoto, Shigeji
PATENT ASSIGNEE(S): Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan; Toyota Jidosha Kabushiki Kaisha; Cataler Industrial Co., Ltd.
SOURCE: Eur. Pat. Appl., 16 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
PATENT NO. KIND DATE APPLICATION NO. DATE
--- --- --- --- ---
EP 722767 A1 19960724 EP 1996-100562 19960116
JP 08252459 A2 19961001 JP 1995-330660 19951219

JP 09173841 A2 19970708 JP 1995-342726 19951228
US 5686377 A 19971111 US 1996-586281 19960116
CN 1137945 A 19961218 CN 1996-104057 19960117
PRIORITY APPLN. INFO.: JP 1995-5112 A 19950117
JP 1995-330660 A 19951219 JP 1995-342726 A 19951228
AB A catalyst for purifying exhaust gases comprises a catalyst carrier made of potassium titanate and a noble metal loaded on a catalyst carrier. The catalyst carrier is substantially alumina free. This catalyst can oxidize at least hydrocarbons in exhaust gases at a high catalytic activity even at low temps., and at the same time can suppress SO2 from converting into sulfates. This catalyst does not employ substance like alumina exhibiting solid acidity as a catalyst carrier. The catalyst is suitable for purification of diesel exhaust gases.

L6 ANSWER 57 OF 160 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1992:132236 CAPLUS
DOCUMENT NUMBER: 116:132236
TITLE: Manufacture of sulfur dioxide from calcium sulfate by entrained high-temperature slagging reduction
INVENTOR(S): Laird, Douglas H.
PATENT ASSIGNEE(S): Science Ventures, Inc., USA
SOURCE: U.S., 11 pp. Cont.-in-part of U.S. Ser. No. 192,338, abandoned.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
PATENT NO. KIND DATE APPLICATION NO. DATE
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US 5066474 A 19911119 US 1989-450028 19891213
PRIORITY APPLN. INFO.: US 1987-8763 19870130
US 1988-192338 19880510
AB The process comprises dispersing the CaSO4-containing particles into a reaction gas comprising O-containing gas and an excess of carbonaceous fuel, igniting the reactant gas stream, distributing the ignited gas stream into a reaction vessel to produce a SO2-containing gas and a molten slag, collecting the formed molten slag on the inside surfaces of the reaction vessel, maintaining the reaction vessel at <1780° yet sufficient to maintain the molten slag in a fluid state, and removing the SO2-containing gas as well as the collected slag from the reaction vessel.

L6 ANSWER 67 OF 160 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1989:215763 CAPLUS
DOCUMENT NUMBER: 110:215763
TITLE: Manufacture of ammonia and sulfur dioxide from ammonium sulfate
INVENTOR(S): Takenouchi, Youji; Nishiguchi, Katsuhiko; Abe, Kunio
PATENT ASSIGNEE(S): Kuraray Co., Ltd., Japan; Kyowa Gas Chemical Industry Co., Ltd.; JGC Corp.
SOURCE: Eur. Pat. Appl., 15 pp.
CODEN: EPXXDW

DOCUMENT TYPE: Patent
LANGUAGE: English
PATENT NO. KIND DATE APPLICATION NO. DATE
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EP 307869 A1 19890322 EP 1988-114959 19880913
EP 307869 B1 19930609
JP 01072915 A2 19890317 JP 1987-230480 19870915
CA 1335690 A1 19950530 CA 1988-577233 19880913
KR 129004 B1 19980404 KR 1988-11918 19880915
JP 02080307 A2 19900320 JP 1989-56497 19890310
US 4990319 A 19910205 US 1989-322205 19890313
PRIORITY APPLN. INFO.: JP 1987-230480 A 19870915
EP 1988-114959 A 19880913
US 1988-245689 B2 19880915
AB The title process comprises (a) reacting (NH4)2SO4 with a metal oxide or hydroxide at <SYM163>200° to form NH3, water and a metal sulfate, and recovering the NH3, (b) decomposing the metal sulfate in the presence of a reducing agent to form the metal oxide and recovering the SO2, and (c) recycling the metal oxide, optionally after conversion into the hydroxide, to step a. This method is especially suitable to convert excess (NH4)2SO4 into values in the most economic way. A mixture of 40 g MgO and 250 g water was stirred at 80° for 60 min, after which 110 g (NH4)2SO4 was added, and stirring at 80° was continued for another 60 min. After cooling, MgO and Mg(OH)2 were separated from the mixture, and the mixture was distilled to give NH3 in 97% yield. The resulting MgSO4 solution was concentrated, and cooled to give 200 g MgSO4.7H2O, which was dried at 100° to give 115 g powder. The powder was heated in flowing H (150 mL/min) at 800° for 30 min to give 33 g 98%-pure MgO. The NH3 was reacted with CH4 to give HCN, which was reacted with Me2CO to give cyanohydrin. The SO2 was recovered as H2SO4, and the final compds. were useful in the manufacture of Me methacrylate.

L6 ANSWER 72 OF 160 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1987:562442 CAPLUS
DOCUMENT NUMBER: 107:162442
TITLE: Adsorption of sulfur dioxide and reduction of sulfate on alumina and alkali-alumina at high temperatures
AUTHOR(S): Edelstein, Sergio
CORPORATE SOURCE: California Inst. Technol., Pasadena, CA, USA
SOURCE: (1987) 202 pp. Avail.: Univ. Microfilms Int., Order No. DA8710937
From: Diss. Abstr. Int. B 1987, 48(2), 506
DOCUMENT TYPE: Dissertation
LANGUAGE: English
AB Unavailable

L7 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1989:483339 CAPLUS
DOCUMENT NUMBER: 111:83339

TITLE: Role of active oxygen of chromia-titania catalyst for the simultaneous removal of sulfur and nitrogen oxides at low temperature
AUTHOR(S): Kasaoka, Shigeaki; Sasaoka, Eiji; Iwasaki, Hideto
CORPORATE SOURCE: Fac. Eng., Okayama Univ., Okayama, 700, Japan
SOURCE: Nippon Kagaku Kaishi (1989), (6), 1008-16
CODEN: NKAKB8; ISSN: 0369-4577
DOCUMENT TYPE: Journal
LANGUAGE: Japanese
AB The role of active O on copptd. 30:70 (mol %) Cr2O3-TiO2 catalyst for the simultaneous removal of S and N oxides from flue gas was investigated. In this process, SO2 is catalytically oxidized to SO3, and then fixed on the catalyst as sulfates (NH4HSO4 and (NH4)2SO4) through the reaction with H2O and NH3, and NO and NO2 are reduced to N with NH3 over the same catalyst at .apprx.130°. Studies were made in a flow type packed-bed reactor at atmospheric pressure and 130°. A gaseous mixture with various concns. of SO2 (250 ppm), NO (250 ppm), NH3 (500 ppm), H2O (10%), and N (balance) was fed with and without O(5%). Active O for the denitrification (NO removal) was also active for the desulfurization (SO2 removal). NO was oxidized to NO2 with active O, and the effect of SO2 on the oxidation was small. The amount of SOx removed over the catalyst in the SO2-NH3-H2O-N system by the effect of NH3 was larger than that in the SO2-H2O-N system. The reactivity of active O with NH3 was low. The oxidation of NO with O in gas phase was accelerated by the presence of SO2, but the rate of the oxidation was decreased with the time on stream. It was suggested that the active sites for O were covered with the oxidation products, such as SO3, H2SO4, and H2O. Both the desulfurization and the denitrification, which depended on the uptake of O from the gas phase, proceeded steadily in the presence of SO2 and NH3. It was suggested that NH3 converted SO3 formed from the NH4 sulfates, and accelerated the O uptake as a result.

FILE 'CAPLUS' ENTERED AT 16:08:09 ON 07 JUL 2004
L1 0 POBERTS P?/AU
L2 1378 ROBERTS P?/AU
L3 4 L2 AND FRIEDLANDER S?/AU

L3 ANSWER 1 OF 4 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1976:529700 CAPLUS
DOCUMENT NUMBER: 85:129700
TITLE: Photochemical aerosol formation. Sulfur dioxide,1-heptene, and NOx in ambient air
AUTHOR(S): Roberts, Paul T.; Friedlander, Sheldon K.
CORPORATE SOURCE: California Inst. Technol., Pasadena, CA, USA
SOURCE: Environmental Science and Technology (1976), 10(6), 573-80
CODEN: ESTHAG; ISSN: 0013-936X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Aerosol formation was studied in a 96-m3 Teflon bag containing un-filtered ambient air to which small amts. of SO2, 1-heptene [592-76-7], and NOx had been

added. The contents were irradiated by sunlight. Gas phase concns. were monitored continuously and a rate law was determined for the reaction of 1-heptene. By simultaneous measurements of the conversion of SO2 and the formation of particulate S, a S balance was carried out on the system. The distribution of S with respect to particle size, as well as total aerosol S and C, was measured as a function of time during the expts. The rates of formation of condensable species of both S and C are consistent with a reaction between SO2 and a reactive intermediate of the th O3-1-heptene reaction. The distribution of S with respect to particle size shows a bimodal distribution about 0.2 <SYM109>m.

L3 ANSWER 2 OF 4 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1976:482658 CAPLUS
DOCUMENT NUMBER: 85:82658
TITLE: "Analysis of sulfur in deposited aerosol particles by vaporizartion and flame photometric detection"
AUTHOR(S): *Roberts, P. T.; Friedlander, S. K.*
CORPORATE SOURCE: W. M. Keck Eng. Lab., California Inst. Technol.,Pasadena, CA, USA
SOURCE: **Atmospheric Environment (1967-1989) (1976), 10(5), 403-8**
CODEN: ATENBP; ISSN: 0004-6981
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The title method has a coefficient of variance of 7.3% and a lower limit of detection of 1 ng S independent of S species. The method responds to S. compds. which evaporate or decompose <.apprx.1200°. The method was used to measure aerosol S concns. (both total filter and with respect to particle size) in the Los Angeles atmospheric and in smog chamber expts.

L3 ANSWER 3 OF 4 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1976:110814 CAPLUS
DOCUMENT NUMBER: 84:110814
TITLE: Sulfate and nitrate chemistry in photochemical smog
AUTHOR(S): Hidy, G. M.; Appel, B.; Clark, W. E.; Friedlander, S. K.; Giauque, R.; Holmes, J.; Novakov, T.; Roberts, P.; Wesolowski, J. J.
CORPORATE SOURCE: Rockwell Sci. Cent., Thousand Oaks, CA, USA
SOURCE: Prepr. Pap. Natl. Meet., Div. Environ. Chem., Am. Chem. Soc. (1974), Volume 14, Issue 1, 39-41
CODEN: ACEPCF
DOCUMENT TYPE: Conference
LANGUAGE: English
AB Several aspects of sulfate and nitrate chemistry are discussed. Early anal. of the results indicate that the bulk of the sulfate and nitrate found in Los Angeles air derive from atmospheric chemical transformations. A heterogeneous mechanism is suggested for sulfate and nitrate formation that requires the presence of moisture in the existing aerosols. Possible relations between these constituents of the aerosol and gaseous

components of smog is discussed. There also is evidence that significant amts. of S oxides may be present as adsorbed species on C particles from combustion sources.

L3 ANSWER 4 OF 4 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1976:21571 CAPLUS
DOCUMENT NUMBER: 84:21571
TITLE: Conversion of sulfur dioxide to sulfur particulate in the Los Angeles atmosphere
AUTHOR(S): Roberts, Paul T.; Friedlander, Sheldon K.
CORPORATE SOURCE: W. M. Keck Lab. Environ. Eng., California Inst. Technol., Pasadena, CA, USA
SOURCE: Environmental Health Perspectives (1975), (10), 103-8
CODEN: EVHPAZ; ISSN: 0091-6765
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Gas phase (SO2 [7446-09-5]) and particulate phase (aerosol) S [7704-34-9] were determined at various locations in the Los Angeles basin. A new method was developed for the determination of aerosol S from measurements of the aerosol/SO2 S ratio near the major stationary sources and far downstream and from ests. of travel times determined by air trajectory anal. Ests. were obtained for SO2-to-aerosol rates. These rates varied considerably indicating dependence on such parameters as O3, free radicals, olefins, and relative humidity. The dynamic and steady-state effect of the introduction of automobile oxidation catalytic converters on aerosol S was estimated There was a significant increase in aerosol S at a receptor site such as Pasadena and a much larger increase at receptor sites near high-d. automobile traffic.

FILE 'CAPLUS' ENTERED AT 13:37:37 ON 09 JUL 2004
L1 7567 (SULFUR OR SULFATE) (S) CHROMIUM
L2 343 N L1 AND (CHROMIUM (3A) (SALT OR CARBID))
L3 75 L2 AND REDUC?
L4 4885 SULFATE (S) CHROMIUM
L5 0 SULFATE (S) "SULFUE DIOXIDE" (S) (CHROMIUM OR CR)
L6 0 (SULFATE (S) CHROMIUM) AND "SULFUE DIOXIDE"
L7 12 (PULSE? (2A) FLUOR?) (S) "SULFUR DIOXIDE"

=> d l3 ibib abs 43

L3 ANSWER 43 OF 75 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1976:144189 CAPLUS
DOCUMENT NUMBER: 84:144189
TITLE: Determination of elemental sulfur by reduction to hydrogen sulfide with metallic chromium and a solution of a chromium (II) salt
AUTHOR(S): Volkov, I. I.; Zhabina, N. N.
CORPORATE SOURCE: USSR
SOURCE: Khim. Anal. Morsk. Osadkov (1975), 94-108. Editor(s): Ostroumov, E. A. "Nauka": Moscow, USSR.
CODEN: 31WKAK

DOCUMENT TYPE: Conference
LANGUAGE: Russian
AB The determination of elemental S was based on its reduction with Cr metal in HCl or with a CrCl2 solution to H2S and its subsequent iodometric or photometric determination The exptl. apparatus is described. The sulfide and sulfate S were removed by dilute HCl in a stream of CO2. The residue was extracted on a boiling water bath with Me2CO for <SYM179>16 hr. For the determination with Cr metal, an aliquot of the Me2CO extract, containing >2 but <15 mg S, was exapd. to dryness. To the residue, 2-5 ml pyridine was added, and, after dissolving the residue, 5 ml EtOH and 0.3-1.5 g Cr metal were added. Air was removed from the apparatus with CO2 in 3-5 min, 15-70 ml HCl (d. 1.19) was added, and CO2 was percolated through the system before heating and at the b.p. for 10-15 and 35-40 min, resp. The H2S was absorbed in 25-30 ml Cd(OAc)2 solution (25 g/80-90 ml H2O + 1 ml HOAc). CdS from the tank was slowly poured into 0.02N I solution acidified with HCl and titrated with 0.02N Na2S2O3. During the iodometric determination of elemental S by using the CrCl2 solution, the pyridine solution was treated as above. CrCl2 solution 30-50 and HCl (d. 1.12) 30 ml were added to the apparatus H2S was removed with CO2 in the cold and then at the b.p. for 10-15 and 30 min, resp., and after the heating was discontinued, the solution was still flushed with CO2 for 10-15 min. The rest of the procedure was the same as with Cr metal. For the photometric determination of elemental S, 20 ml Zn(OAc)2 solution ($Zn(OAc)_{2.2}H2O$ 50, NaOAc 10, and NaCl 0.05 g/l. H2O) was used to absorb H2S (released with CrCl2 solution in HCl). To the precipitated ZnS, 8 ml dimethyl-p-phenylenediamine solution was added, the solution was rapidly stirred, 2 ml ferric alum was added, and the mixture was shaken for 30 sec. After the formation of methylene blue, the solution was diluted to 50 or 100 ml, according to the color intensity. The color developed in 15 min and was stable for a few hr.

L7 ANSWER 1 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:50856 CAPLUS
DOCUMENT NUMBER: 138:291687
TITLE: Real-time PM2.5 sulfate measurements at Big Bend National Park
AUTHOR(S): Hering, Susanne; Stolzenburg, Mark; Dietrich, David; Tigges, Mark; Wagner, Jim; Dutcher, Dabrina
CORPORATE SOURCE: Aerosol Dynamics Inc., Berkeley, CA, USA
SOURCE: Regional Haze and Global Radiation Balance: Aerosol Measurements and Models--Closure, Reconciliation and Evaluation, Proceedings of a Specialty Conference, Bend, OR, United States, Oct. 2-5, 2001 (2001), 227-229. Air & Waste Management Association: Pittsburgh, Pa.
CODEN: 69DMDN; ISBN: 0-923204-41-5
DOCUMENT TYPE: Conference; (computer optical disk)
LANGUAGE: English
AB Fine particle sulfate was measured continuously for 90 consecutive days during the BRAVO study at Big Bend National Park. Measurements were made with a prototype integrated collection and vaporization cell, whereby particles are humidified and collected by impaction onto a metal strip and analyzed in place by flash-vaporization and pulsed fluorescence detection of the evolved sulfur dioxide. As operated for BRAVO,

the time resolution was 12 min, corresponding to a 10-min collection period followed by a two-minute anal. step. REFERENCE COUNT: 4

L7 ANSWER 2 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1997:546211 CAPLUS
DOCUMENT NUMBER: 127:194538
TITLE: Intercomparison of measurements of sulfur dioxide in ambient air by carbonate-impregnated filters and Teco pulsed-fluorescence analyzers
AUTHOR(S): Ferek, Ronald J.; Covert, Paul A.; Luke, Winston
CORPORATE SOURCE: Department of Atmospheric Sciences, University of Washington, Seattle, USA
SOURCE: Journal of Geophysical Research, [Atmospheres] (1997), 102(D13), 16267-16272
CODEN: JGRDE3; ISSN: 0148-0227
PUBLISHER: American Geophysical Union
DOCUMENT TYPE: Journal
LANGUAGE: English
AB In two previous University of Washington field programs, airborne measurements of SO2 using carbonate-impregnated filters and a Teco pulsed-fluorescence analyzer showed excellent agreement over a range of ambient concns. from 2 to 127 ppbv. As part of the Gas-Phase Sulfur Intercomparison Experiment (GASIE), ambient air, diluted five-fold to ten-fold with zero air, was sampled in the concentration range of 0.02 to 4 ppbv. With the bulk of the measurements in the range of 40 to 230 parts per trillion by volume (pptv), agreement between the two techniques was again very good (regression equation: Teco = 1.07(filter) + 4.5 pptv, r = 0.93). Using careful precleaning, impregnation, storage, and handling techniques for the filter substrates, at sub-100 pptv concns., the filter method is capable of an accuracy of better than ±10% with a±7 pptv uncertainty (due to blank variability) for 6 m3 samples. In addition, the Teco model 43S is capable of rather precise measurements of sub-100 pptv concns. (approx. ±16 pptv) provided a suitable averaging time is employed (at least 10 min).

L7 ANSWER 3 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1997:546210 CAPLUS
DOCUMENT NUMBER: 127:194537
TITLE: Evaluation of a commercial pulsed fluorescence detector for the measurement of low-level SO2 concentrations during the gas-phase sulfur intercomparison experiment
AUTHOR(S): Luke, Winston T.
CORPORATE SOURCE: Air Resources Laboratory, National Oceanic and Atmospheric Administration, Silver Spring, MD, USA
SOURCE: Journal of Geophysical Research, [Atmospheres] (1997), 102(D13), 16255-16265
CODEN: JGRDE3; ISSN: 0148-0227
PUBLISHER: American Geophysical Union
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A modified pulsed fluorescence (PF) detector (Thermo Environmental Instruments, Model 43s) was used to measure low levels of SO2 in a rigorous, blind intercomparison experiment (Gas-Phase Intercomparison Experiment GASIE). The PF detector was able to detect as little as 30 pptv SO2 in a 25-min sampling interval. The coeffs. of variation for measurements of approx. 30, 60, 200, 330, and 600 pptv were approx. 40, 9, 6.5, 3, and 3%, resp. Overall uncertainty of the measurements at 30 pptv approaches ± 100%. As inferred from GASIE results, the response of the PF detector may be reduced (quenched) by approx. 7% and 15% at water vapor mixing ratios of 1 and 1.5 mol percent (relative humidities of 35-50% at 20-25°C and 1 atm), resp. These results are uncertain, however, due to lack of extensive data. Post-GASIE tests point to moderate interferences from NO (rejection ratio of 35), CS2 (rejection ratio of 20), and a number of highly fluorescent aromatic hydrocarbons such as benzene, toluene, o-xylene, m-xylene, p-xylene, m-ethyltoluene, ethylbenzene, and 1,2,4- trimethylbenzene. Rejection ratios for these compds. increase from approx. 17-123 to approx. 1200-3800 as the sample flow rate is decreased from 2000 to 300 standard cubic centimeters per min (sccm), and the hydrocarbons are more efficiently removed by the instrument's proprietary hydrocarbon "kicker" membrane. At a flow rate of 300 sccm and a pressure drop of 645 torr across the kicker, the interference from ppmv levels of many aromatic hydrocarbon was eliminated entirely. None of the tested interferants were removed by the carbonate-impregnated paper filter used to zero the instrument during GASIE; thus they induced no net response in the PF detector. These results illustrate the importance of using a selective zeroing method to scrub SO2 without removing potential interferants from the sample flow, thus preserving the overall composition of the sampling matrix.

L7 ANSWER 4 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1996:556541 CAPLUS
DOCUMENT NUMBER: 125:199741
TITLE: Laser induced fluorescence in a pulsed propagated flame - a new technique for combustion studies
AUTHOR(S): Cheskis, Sergey; Derzy, Igor; Iogansen, Alexander A.; Kalontarov, Lev
CORPORATE SOURCE: Fac. Exact Sci., Tel Aviv Univ., Tel Aviv-Jaffa, 69978, Israel
SOURCE: Combustion Science and Technology (1995), 104(4-6), 441-447
CODEN: CBSTB9; ISSN: 0010-2202
PUBLISHER: Gordon & Breach
DOCUMENT TYPE: Journal
LANGUAGE: English
AB We demonstrate that Laser Induced Fluorescence in a pulsed propagated flame can be used as a new method for quant. measurements in combustion.
Time resolved LIF measurements were used to obtain temporal temperature and concentration profiles of OH radicals and S2 mols. in hydrogen/air flames doped with SO2. The advantages of the proposed approach are discussed.

L7 ANSWER 6 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1988:636025 CAPLUS
DOCUMENT NUMBER: 109:236025

TITLE: Continuous atmospheric sulfur gas measurements aboard an aircraft: a comparison between the flame photometric and fluorescence methods
AUTHOR(S): Boatman, J. F.; Luria, M.; Van Valin, C. C.; Wellman, D. L.
CORPORATE SOURCE: Air Resour. Lab., Natl. Oceanic Atmos. Adm., Boulder, CO, 80303, USA
SOURCE: Atmospheric Environment (1967-1989) (1988), 22(9), 1949-55
CODEN: ATENBP; ISSN: 0004-6981
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Analyzers that use the flame photometric and pulsed fluorescence techniques measured trace concns. of S gas aboard an instrumented aircraft. Concns. in the range of 1-20 ppb (volume) were found at various locations over the US East Coast and near Bermuda at altitudes of <SYM163>4000 m. The response of both instruments changes significantly with ambient air pressure. In the case of the fluorescence method, a simple correction is applied to both the zero and span values. For the flame photometric instrument, the correction is more complicated, less accurate and valid only for ambient air pressures of >750 millibars. A comparison between the 2 methods, based on several thousand 1-min avs., shows that the flame photometer produced consistently larger concns. (27%) than the fluorescence device. Addnl. comparisons between continuous monitors aboard 2 aircraft sampling in parallel produced reasonable agreement. The use of 2 different techniques for measuring S gas establishes a range in the S gas concentration This range is meaningful, since it delineates the contributions of the various interferences.

L7 ANSWER 7 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1988:226036 CAPLUS
DOCUMENT NUMBER: 108:226036
TITLE: Water interference of pulsed fluorescence sulfur dioxide monitor
AUTHOR(S): Stelson, Arthur W.; Bao, Xiaoping
CORPORATE SOURCE: Atlanta Univ. Cent., Inc., Atlanta, GA, USA
SOURCE: JAPCA (1988), 38(4), 420
CODEN: JIJME4; ISSN: 0894-0630
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The readings of a pulsed fluorescence SO2 monitor are decreased by .apprx.35% at flue gas water concns. of >2 mol%.

L7 ANSWER 9 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1981:520122 CAPLUS
DOCUMENT NUMBER: 95:120122
TITLE: Measuring sulfur dioxide: comparison of pulse fluorescence, flame photometry and West-Gaeke bubblers
AUTHOR(S): Kinney, Patrick L.; Spengler, John D.
CORPORATE SOURCE: Harvard Sch. Public Health, Boston, MA, USA
SOURCE: Proceedings, Annual Meeting - Air Pollution Control Association (1980), 73rd.(2), Paper 80-19.6, 16 pp.

CODEN: PRAPAP; ISSN: 0099-4081
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Large relative differences occurred in the SO2 data collected by the 3 title analyzers at the low ambient levels (annual average 0.01-0.015) at the site used for the study. The differences for the continuous analyzers (pulse fluorescence and flame photometry) were discussed in terms of the calibration data. The study indicated that, to insure reasonably accurate data in the monitoring of low SO2 concns., calibrators must have the capability of generating test conditions in the 10-50 ppb range.

L7 ANSWER 10 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1978:494290 CAPLUS
DOCUMENT NUMBER: 89:94290
TITLE: Measurement of sulfur dioxide in the air by ultraviolet pulse fluorescence analysis
AUTHOR(S): Urano, Yoriyuki
CORPORATE SOURCE: Yanagimoto Mfg. Co., Ltd., Kyoto, Japan
SOURCE: PPM (1977), 8(12), 37-44
CODEN: PPMMDV; ISSN: 0285-5429
DOCUMENT TYPE: Journal
LANGUAGE: Japanese
AB A continuous SO2 monitor using UV pulse fluorescence anal. was developed. The data of SO2, CO2 and NH3 obtained with this monitor and the intermittent SO2 monitor (using conductometric anal.) were compared.

L7 ANSWER 11 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1977:428028 CAPLUS
DOCUMENT NUMBER: 87:28028
TITLE: Measurement of ambient air sulfur dioxide concentration
AUTHOR(S): Anon.
CORPORATE SOURCE: Australia
SOURCE: Australian Process Engineering (1976), 4(11), 35, 37
CODEN: AUPEAP; ISSN: 0310-933X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Both field and equivalency tests show the Model 43 pulsed fluorescent SO2 analyzer accurately monitors ambient air for SO2.

L7 ANSWER 12 OF 12 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1974:540407 CAPLUS
DOCUMENT NUMBER: 81:140407
TITLE: "Source level sulfur dioxide analysis via pulsed fluorescence"
AUTHOR(S): *Zolner, William J.; Mager, Daniel J.; Helm, Denis A.*
CORPORATE SOURCE: Thermo Electron Corp., Waltham, MA, USA
SOURCE: **Analysis Instrumentation (Research Triangle Park, North Carolina) (1974), 12, 9-17**
CODEN: AINSB8; ISSN: 0882-5785
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A new instrumental method for the determination of SO2 in the 0.5-5000 ppm range is pulsed fluorescence, which uses the fluorescent emission of SO2 mols. from excitation by a short, high-intensity uv pulse. The SO2 mols. then emit fluorescent radiation in direct proportion to their concentration which is measured and converted to an electronic measurement which gives the concentration in ppm.